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THE MOTIONS OF THE B STARS¹

By Dr. J. S. PLASKETT, F.R.S.

DIRECTOR OF THE DOMINION ASTROPHYSICAL OBSERVATORY, CANADA

THE radial motions of the B type stars have been discussed by Frost and Adams, Campbell, Kapteyn, von Pahlen and Freundlich and by many others. Frost and Adams, from the radial velocities of twenty B type stars, were the first to direct attention to and Campbell, from much greater observational material, to confirm the results of these early observations, that the peculiar radial velocities, the velocities remaining after the component of the solar motion was removed or the actual velocities with respect to the stellar system, were much smaller for the B stars than any other spectral class, and further, that there was a large excess of velocities of recession, positive velocities, on the average nearly 5 km per sec., as if the system of B stars was expanding with respect to the sun.

¹ Address of the retiring vice-president for Section D—Astronomy, American Association for the Advancement of Science, Des Moines, Iowa, December 31, 1929.

This K term, as Campbell called it, which in his final determination had a value of +4.9 km per sec. and which was practically non-existent in other spectral types than B, caused considerable speculation. Attempts to explain it as due to a personal equation in the measurement of the broad-lined B type spectra, to errors in wave-length or to a red displacement of the effective center of absorption produced by some physical cause could not be made to account for more than a small part of the 5 km observed. The Einstein redward shift of the spectral lines of massive stars was later brought forward as a cause of this mysterious effect but on no probable assumption of mass and density could the displacement thus produced exceed a fraction of a kilometer.

A new departure in the explanation of this mysterious K term appeared a few months ago in the *Potsdam Publications* in a paper by von Pahlen and Freundlich who claim that it represents a real motion

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